

AURAL STUDY SYSTEMS FOR THE VISUALLY HANDI-  
CAPPED, GUIDE TO EFFECTIVE STUDY THROUGH  
LISTENING. INTERIM PROGRESS REPORT NO. 11.

By

Carson Y. Nolan et al

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INTERIM PROGRESS REPORT

Project No. 8-0046

Grant No. OEG-0-8-080046-2670(032)

Aural Study Systems for the Visually  
Handicapped

No. 11 Guide to Effective Study  
through Listening

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and June E. Morris

American Printing House for the Blind, Inc.

1839 Frankfort Avenue

Louisville, Kentucky 40206

1973

Department of Health, Education, and Welfare

U. S. Office of Education

Bureau of Education for the Handicapped

8/25/77 Letter Request

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The research reported herein was performed pursuant to a grant with the Bureau of Education for the Handicapped, U. S. Office of Education, Department of Health, Education, and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official position of the Bureau of Education for the Handicapped.

Department of Health, Education, and Welfare

U. S. Office of Education  
Bureau of Education for the Handicapped



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## Guide to Effective Study through Listening

Your recorded textbook has started to play. You hear the words, but how much will you understand and remember of what you hear? This will depend on the methods you use in study. If you have used recorded texts in the past, you may have a system for study. If you have not used recorded texts, you will need to develop effective study methods. In either case, the purpose of this guide is to assist you to improve your listening study techniques by describing some of the factors that research has shown to be related to successful study through listening.

### The Role of Listening in Study

At the outset, it should be made clear that study for you as a visually handicapped student is the same as for any student. Students everywhere have the common problem of obtaining factual information which contributes to their understanding and subsequent learning of any topic. In typical classrooms across the country, reading textbooks or other written material continues to be the formal method used by students to gain information. The need for reading skills is recognized and the acquisition of these skills is understandably emphasized. However, too often reading is not helpful because the student has difficulty comprehending what he reads, reads very slowly, or is unable to obtain material in written form.

An alternative method for gaining information in study is listening. Whether or not it is formally recognized, listening has played an extremely important part in all of our educational experiences. A study of elementary level sighted children indicated they spent 30% of their waking day in some listening activity. In another study of elementary classrooms, the time spent listening was found to be three times that spent reading and four times that spent writing. There is certainly no reason to believe that listening time would be any less in a classroom of visually handicapped children. In fact, a greater emphasis on listening might be expected.

Learning through listening receives greater emphasis as students progress in school. You have probably experienced more lecture presentations and have been assigned more oral reports as you have gone up through the grades. Most teachers would probably agree that learning through listening is a good method to supplement reading. Perhaps under some special circumstances the priorities should be reversed and reading should supplement listening.

Such a special case would exist where students for any reason read quite slowly. Visually handicapped students might be such a case. A study of their reading rates indicated that legally blind high school

students read braille at an average rate of only 65 to 74 words per minute and that large type students read at an average 80 to 86 words per minute. Of course, there will be differences based on such things as individual abilities and the types of material. However, these rates are quite slow when compared to those attained by sighted students. Nevertheless, they are realistic in the sense that they were obtained under research conditions which closely approximated real study situations. It is doubtful that reading rates of braille and large type readers can be dramatically increased through special training or the development of new devices. Consequently, more rapid means of obtaining information, such as listening, are needed.

An additional factor that may contribute to a reordering of reading-listening priorities for visually handicapped students is the requirement to study increasingly larger amounts of information in the higher grades. You may have recognized this problem in the intermediate grades when suddenly you were expected to read greater and greater amounts of material that had also increased in difficulty. If you read slowly, there simply is not enough time to complete all the reading required. A final factor leading to emphasis of listening over reading is that much material simply may not be available in braille or large print form. Consequently, recorded versions of this material may be the student's only resource.

The most positive aspect of listening or aural learning concerns time required for study. Listening is actually more efficient than reading for most visually handicapped students. Efficiency in this sense is based on the time it takes to listen as compared with the time it takes to read. On the average reading rates of braille and large type users are about one-half the rate of recorded Talking Books. Consequently, through listening the same information can be obtained in half the time required for reading it. Additionally, it is possible to listen at much faster than normal speech rates, so efficiency may be improved still further.

It has been mentioned that listening is an important part of learning, as it presently occurs in the classroom, at all grades; and its special usefulness to the visually handicapped has been described. An important thing to emphasize is that the usefulness of listening is constantly being increased through the identification of listening techniques and improvements in the design of recording equipment. You should constantly be alert to new developments in order to take advantage of them as they occur.

Recorders and playback equipment are now being designed especially to meet the needs of the visually handicapped. Continuously variable speed controls allow the user to slow down or speed up rates of play to fit his momentary needs. It is now also possible to play material at faster than normal rates without serious distortion of sound. Tone signals can be recorded at the points you want them to provide an index system. Special tonal codes for use in this system are being developed. Multitrack sets



allow more material to be recorded on a tape. Replay capabilities for single words, phrases, or longer elements are available. Such technological developments offer additional opportunities for the listener to become an independent and efficient student.

### Preparations for Learning by Listening

Students who use recorded texts stress the need for careful advance preparation. The first step is to acquire the necessary materials. It is advisable to make provisions far ahead to assure your recorded texts are available when needed. This includes learning the titles of the required texts well ahead of the start of the study term, checking on their current availability, and making provisions for their recording if not available.

Course instructors and school bookstores can provide you with titles of required texts. Current availability of texts may be determined through the Library of Congress Union Catalog, The Instructional Materials Reference Center of the American Printing House for the Blind, or from Recording for the Blind. The addresses of these sources are the following:

Library of Congress, Division for the Blind and Physically Handicapped, 1291 Taylor Street, N. W., Washington, D. C. 20542

Instructional Materials Reference Center, American Printing House for the Blind, Inc., P. O. Box 6085, Louisville, Kentucky 40206

Recording for the Blind, Inc., 215 East 58th Street, New York, New York 10022

The Union Catalog, compiled by the Library of Congress, lists recorded, braille, and large type materials of a supplementary nature at all levels including college. All trade books are included in the Union Catalog. Books listed in the catalog are available through the interlibrary loan service of the Regional Libraries for the Blind. The American Printing House's Central Catalog of volunteer produced books lists titles of books in recorded form and also in braille and large type.

Volunteer organizations are the primary source of recorded textbooks. The largest and most widely known is Recording for the Blind, Inc. which has served the needs of high school and college students free of charge for many years. At the present time, Recording for the Blind has 27 professionally equipped studios in 15 states. Their task is twofold, "recording new educational books as they are requested by blind students; and storing them on master tapes that will provide an ever-growing library resource for students in the future." Their master tape library presently has over 22,000 titles and is growing by about 4,000 new titles annually. The ready availability of requested titles is

highlighted by the fact that in 1972-73, 95% of the books requested had already been recorded and were in the master library. To give some idea of the demand for recorded texts it may be noted that in 1972-73, 10,146 visually handicapped students received 64,275 books.

You should obtain and use reliable and up-to-date recording and playback equipment. It is essential that you become completely familiar with its capabilities. In general, you will need equipment with recording and playback functions. Recorders should have the capability to index, or place on the tape an audible signal that can be heard when the machine is placed in fast forward or rewind. Indexing is essential if you are to locate specific parts of a book or chapter without listening to the entire selection. Pause and stop controls will also frequently be used in recording. It will be necessary for you to experiment briefly with the capabilities of the microphone, whether it be external or built-in the recorder, to insure that you record everything you want.

You may be listening to open reel tapes, cassettes, or discs. Consequently, you will need playback equipment that can handle all three of these presentation modes. You should be completely familiar with all equipment controls. The fast forward and rewind will be used to listen for tonally indexed information, and the pause control will generally be used when taking notes. One of the most important features of the playback equipment is the variable speed capability. This feature allows you to personally control the speed of the presentation. College students who use recordings extensively have reported that speeding the presentation rate by half is possible without loss of comprehension. Through use of the variable speed control alone, these rates cannot be achieved; however, using special compressed speech equipment can provide these speeds without the "Donald Duck" effect that is associated with speeding mechanically through use of a variable speed control. While compressed speech recordings now require special equipment that is rather expensive, technological development may soon make these recordings much more readily available and at a reasonable cost. Listening at speeds greater than normal may be enhanced through use of earphones.

Just for a moment look at what faster speeds can do in terms of your total listening study time. At 160 words per minute a selection of 400 words requires 2 minutes 30 seconds listening time. If you were to set the variable speed control now found on all current models of American Printing House players at maximum, the time required to listen to the same material would be 1 minute 40 seconds. The time required to cover a 10 page assignment at 400 words per page could be reduced from 25 minutes to approximately 16 minutes 40 seconds. Quite a saving in time! However, achieving this requires some practice in listening to speeded playback on your part.

It is quite possible that you will be using the recording function of your equipment in a number of different situations. You may record lectures, discussions, the voice of your own reader, and your own notes.

It is extremely important that you become completely familiar with recording capability of your machine. While your equipment may be of the newest type and quite dependable, your ultimate success lies in finding the best and most effective ways to use it. Be inventive whenever you can.

### Methods for Study

Get a general idea of the material to be studied.

It is quite helpful, before engaging in detailed study, to have a general idea of the content of the material, how it is organized, and its length. Not only will this allow you to organize and plan your study time, but more importantly will provide a realistic organization for the study notes you will want to make.

You may yourself make this overview by skimming through the material at high playing speeds achieved through use of your variable speed control or speech compressor. An alternative is to ask your reader or teacher to read or list in braille the parts of the book that can provide this overview. Depending on your purpose, several parts of the book can be used. The foreword gives a general overview of the book and describes the author's interest in writing it. The table of contents provides a complete outline, in greater or lesser detail, of the contents of the book.

Since your study unit will usually be a chapter, you should know of the several ways in which a chapter overview can be obtained. The chapter summary provides an abbreviated description of the contents. For note-taking purposes, an excellent outline can usually be obtained by listing the topic headings in the chapter. Topic headings usually appear every few paragraphs in the chapter and may be organized as major and minor divisions of the chapter. The study questions often found at the end of the chapter can provide an outline of the points the author considers most important as well as set specific goals for learning.

### Active Participation in Study Is Important

Studying a braille or large type book is an activity controlled by the student. Successful study through listening requires the student to actively participate in the study process. This is in contrast to simply sitting quietly and listening. If you have already acquired an overview of what the study material is about, you have taken the first step in active participation.

Planning your study so as to control listening time is an important part of active participation. This is possible once a general overview of the material is acquired. The material to be studied should be broken down into manageable lengths. Listening to too much at a sitting may actually interfere with learning as fatigue accumulates. To some extent this effect might be offset through varying the subject matter to be studied.



Prolonged listening at a single sitting lowers comprehension, consequently, your memory of the material will be less. Use your chapter breakdowns by listening to tables of contents or to topic headings to plan your study sessions. A good general rule to follow is: the more difficult the material, the smaller the bite to be taken at a single sitting.

Be alert for understanding as you listen. Stop and relisten if you don't understand. Make liberal use of your replay capability for this purpose. In many subjects later understanding depends on adequate comprehension on what has come before. For difficult material much more relistening will be necessary than for easy material.

Check your understanding as you listen. This is a central part of active participation. In pacing your study you should plan rest pauses. During these times, try to express what you have just heard to yourself mentally in your own words. If you cannot do this satisfactorily, relisten to the material to gain adequate understanding.

Actively vary the speed at which you listen to suit your study purpose. Use of the highest intelligible speed to find your place will save you time. Remember that the speed at which you listen determines the time it will take to cover the material. Faster speeds enable you to cover the material more quickly. Fast speeds are particularly useful for initial skimming to gain an overview and for final review. If you take notes, as you later will be encouraged to do, slower speeds may be required. The speed at which you can listen will be determined by the difficulty of the subject you study. On some rare occasions, such as when studying foreign language, you may want to slow listening rates below those for normal speech.

In most cases and particularly for difficult material you should take notes as you study. The outline for your notes usually can be made from the topical headings in the chapters. The purpose of notes is to help you review the material after initial study. They will enable you to restudy in shorter periods of time. Of equal importance, the active process of mentally organizing and physically writing notes contributes substantially to the learning process itself. Again, active participation makes remembering material easier. Interviews with users of recorded texts at the high school and college level reveal that many students only listen to these recorded textbooks once. Thereafter, they rely on their notes for further study and review.

### Review and Repeated Study Is Critical to Learning

Listening to recorded material once rarely results in adequate learning. Consequently, repeated study is necessary. For repeated study, it is desirable to spread study over several periods or days rather than study continually for long periods of time. Overlearning a subject is critical if memory is to last. Overlearning involves study that is continued past the point where learning seems to have occurred. Generally

speaking, the length of time things are remembered is related to the amount of practice in learning. The more practice, the longer and more detailed the memory of the topic.

As in study generally, it is important to get an overview for review. Check with your teacher on the type of test to be given and the points he feels are most important. The study questions for each chapter set goals for review and also for judging your mastery of the subject. Ability to answer these correctly and fully is indicative of adequate learning.

Your notes are your best friends in review. If you have taken class notes as well as notes while listening to your texts, these should be correlated and integrated for review. Once this is done, read your notes one or more times to attain a general overall review of the topic. Try to recite the general outline for the material. Next go through your notes topic by topic and point by point and expand each point in your own words fully as possible. Say to yourself mentally or out loud all the facts you can recall about that point. When you cannot recall details, listen to the material again. Use fast playing speeds as much as possible for relistening. Then repeat the process until you can respond to the important questions outlined by your teacher, answer the study questions, or verbally restate the material to yourself to a satisfactory point.

Review with another student is often very helpful to both. One student can recite and the second can check on correctness of the summaries or answers given. Both learn more in the process.

### Helpful Hints for Listening Study

Concentration on the study task is essential to learning. Consequently, you should minimize outside distractions. If possible have a special out of the way place set aside for study. Preferably this space should be outside zones of foot traffic and noise. Having all study equipment located and arranged in a study area will save you time and add to your convenience and comfort. Use this space only for study so that going there means study.

Do not attempt to divide your attention between study tasks and the radio or television. This greatly reduces your efficiency. Try not to interrupt study for phone calls. If your study space has a door, keep it closed to shut out outside noise. If it is not possible to have an isolated quiet study space, the use of earphones will help greatly in insulating you from a noisy location. Such use will also protect the privacy and rights of your near neighbors if you must study in a space that is used by others.

By all means avoid passivity or inactivity while you study. Keep an upright attentive posture. Do not study lying down. If you actively involve yourself in the study process, as already described, you cannot be passive.



Maintaining an alert bodily state helps you keep awake and attentive. Take frequent breaks and move about, change your position, or exercise during these breaks. If you are not taking notes, you can be physically active during listening. Interviews with students reveal that they engage in simple manipulative hand movements while listening in order to keep alert. Such activities might be ironing or folding clothes or simple assembling or disassembling activities. Any peripheral physical activity that requires little or no attention can help keep you alert and awake.

As stated before, be mentally active as well. During breaks repeat or summarize in your own words what you have heard. Note-taking is mental and physical activity and is ideally suited to helping you keep alert.

Avoid getting overly fatigued. Schedule your study into periods of reasonable length distributed throughout the day and week. Intersperse practice periods with other types of physical and mental activities. During any practice period take short breaks. These provide means of controlling the size of the bites you are trying to learn, reviewing what you have heard mentally, taking notes, or engaging in physical activity. Mental review is quite possible while walking up and down your study room.

In order to keep alive attention and interest, vary your study among subjects. Schedule study for interesting subjects in between that for dull subjects and study of hard subjects in between that for easy subjects. Do not leave study of the hardest and duller of subjects for last.

Take adequate notes. Remember the purpose of notes is not to repeat all the material, but to provide leads to enable you to recall the total in organized form. Many students rely solely on notes for review, particularly in cases where books must be returned to the library or other lender.

Notes should be brief summaries in outline form. Chapter topic headings often provide this outline. Notes should consist of key words and short phrases. Main ideas should stand out clearly. Subpoints should be organized and easily identified with the main events to which they apply. Students should develop their own shorthand and use abbreviations where possible. Putting your notes in your own words rather than in the books contributes to understanding and memory. Generally, a few pages of notes will be enough for a chapter. Notes can be written or recorded as you prefer. The different parts of written notes are more accessible than are parts of recorded notes. On the other hand, recorded notes can be taken more rapidly. Generally, study notes should be kept separately from class notes. However, it is usually necessary to correlate information from both these sources for review for tests.

## Obtaining Materials through Local Sources

Of necessity or for convenience, you may have to rely on local volunteer or paid assistants for preparation of materials. This section of the guide contains some suggestions that may be helpful. You will want to adapt or expand these ideas to fit your personal needs and tastes.

If it is possible to choose whether the material be prepared in written or recorded form, it might be helpful to know what experienced users of recorded texts have to suggest. These students expressed a preference for written texts for mathematics, physical science, languages, and special subjects such as computer science. Academic subjects for which students preferred recorded material are those requiring extensive reading. They include such subjects as economics, history, psychology, sociology, and literature.

You may use local readers for direct reading or recording. If possible, screen potential readers. A reader's voice quality and his style of reading are important. These can act as irritants and interfere with concentration or actually lull you to sleep.

Rather than read to you directly, it may be more efficient to have your reader record material. This enables you both to work at your own convenience and can save confusion and time. You still may need to schedule direct reading time with your reader for some assignments and should plan accordingly. Train your reader to read and record materials in the way that is most helpful to you. The following are some points upon which you and your reader should be in agreement.

Your recorded materials should be clearly labelled. Tapes and cassettes should be labelled in braille or large type with the title and pages recorded on each track. At the beginning of each track, an identifying statement should be made as to title, starting page, number of pages recorded on the track, or any other identifying information the user may require. A written table of contents or key should be made listing the pages or parts contained on each track of each tape for the book.

All page numbers should be accounted for. Page numbers should be announced either at the end of the last full sentence on the preceding page or at the first period on the new page, whichever is closest to actual page change. Where an entire page is devoted to an illustration, the fact should be noted when the page is announced so the user won't think the page has been skipped. Page numbers will probably provide the most exact information for finding a specific place in your recorded text.

Where possible, tone indexing should be inserted. All current American Printing House for the Blind tape recording equipment provides the means for insertion of tone-index signals. These signals can be varied in number and duration. Since these can be heard at fast forward

and fast reverse speeds, they provide for rapid search. You and your reader should decide ahead on what features of the book you wish to index. They may be chapters, specific page intervals, and special points; such as, where summaries or study questions occur. Have your reader index the tape as he records the material.

Special problems must be dealt with in recording certain parts of textbooks. Parts such as prefaces, forewords, acknowledgements, introductions and notes go readily into recorded formats. Tables of contents are often more useful when written out. If recorded they should be on a separate tape. They should contain as precise information as possible as to location of topics with respect to tape number, track number, page number, and tonal or other indexing.

Recording of the body of the text usually calls for careful attention to several factors. Generally, the text should be read at as rapid a rate as is conducive to clarity and accuracy. Topical headings should be clearly identified through use of pauses, vocal emphasis, or identification as "major heading" or "subheading." Picture captions and legends should be incorporated into the text when they present additional information. Where quotations represent historical or other important fact they should be identified or noted, (i.e., "quote" and "close quote") so that the user can identify the quote exactly. Non-literary symbols must be identified consistently throughout any one text.

Italicized words may be indicated through voice inflexion; although, if they are new words, they should also be spelled. One or more sentences in italics should be identified with "Italics" . . . "End of italics." Proper nouns and new words (that cannot be sounded out) should be spelled as they occur the first time they are encountered, but not subsequently. In some cases it may be desirable to define these as in the book's glossary.

The appearance of graphics such as maps, charts, and diagrams is a serious problem for recorded texts. Students have expressed preference for these in written form; however, this wish is often impossible to meet. Readers need to be systematic in reading graphics and may also need to interpret them. The shift back to the text should be emphasized when it occurs. In reading numbers in graphics or elsewhere, when a number contains a decimal, the decimal should be read as "point." Except for common fractions (one-half, one-third, etc.), fractions should be read as one number over the other (e.g., fourteen over seventeen for 14/17).

The placement of footnotes is pretty much a matter of individual choice. They may be placed at the end of the sentence to which they refer, read as they occur on the page, or placed at the end of the chapter. In most cases the purposes and usefulness of the footnotes should be surveyed by the student; he should decide how he wants these handled and inform his reader accordingly.



Study questions may be read either before the material to which they refer or at their regular place in the book. Prior reading of study questions allows the student to get an idea of the important things to look for while listening. Short pauses between study questions will give the user time to manipulate his equipment if he wishes to answer or review the question. Again your personal needs are critical in this determination.

Lists of suggested activities should be read slowly and clearly with a definite pause between each. Bibliographic entries or references too should be read slowly and clearly with a definite pause between each. All authors' names should be spelled out. The form appendices take is determined by their format. If this is graphic, then the suggestions above concerning graphics may be applied. The meanings of new words listed in glossaries may be incorporated into the text as these words occur or glossaries may be recorded in place or separately.

The index should usually be omitted because of the many difficulties inherent in use of recorded indices. If you retain a copy of the print book, your sighted reader, teacher, or other helper can help you make use of the print index.

You have the option of omitting from the recording any of the auxiliary parts of the book which are mentioned above. If reference to these is required, the assistance of a reader using the ink-print text can be used. In addition, some students may possess adequate enough vision to use some of the graphics in the ink-print text.

In the case of foreign language books, you may want the vocabulary for specific lessons to be recorded before the lesson. If you are using four track tape, it is possible to record vocabulary on a separate track so that the material for both the lesson and vocabulary start at the same point on the tape. However, this precludes use of the second track for any other purpose.

In the preceding, we have emphasized the importance of listening as a study technique, the preparations that you must make to use recordings as a study tool, some study methods that contribute to efficiency in learning, and factors you must consider in obtaining recorded materials through national and local sources. Developing skill in putting this knowledge into practice should do much to make your study through listening more efficient. As you continue to study through listening, you will be able to adjust your study techniques to suit your own particular set of circumstances as well as to vary them according to the subject matter studied. Good luck!





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(1973)

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